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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,613	01/17/2002	Nikolay Shkolnik	EG-12	9021
29127	7590	09/03/2004	EXAMINER	
HOUSTON ELISEEVA 4 MILITIA DRIVE, SUITE 4 LEXINGTON, MA 02421			MERCADO, JULIAN A	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/051,613	Applicant(s) SHKOLNIK ET AL.	
	Examiner Julian Mercado	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-354 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 14-22, 26, 27 and 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1-28-03</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 14, 15, 22 and 30 are objected to because of the following informalities:

- a. In claim 14 at line 9 and claim 30 at line 9, it is suggested to change "heat exchanger" to --a heat exchanger--.
- b. In claim 15 at line 6, it is suggested to change "and means coupling" to --thereby coupling--.
- c. In claim 22 at line 2, it is suggested to change "is mechanically" to --mechanically--.
- d.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 10, 15 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 5 recites the limitation "the exhaust outlet of the volume expansion engine" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. See claim 1 at line 11 which only recites an inlet for the volume expansion engine.

Claim 10 recites the limitation "the flows outgoing" in line 3. There is insufficient antecedent basis for this limitation in the claim. It is suggested to change "the flows outgoing" to --outgoing flow-- or --the outgoing flow--.

Claim 26 at line 3 recites a similar limitation to claim 10, i.e. "the flows". There is insufficient antecedent basis for this limitation in the claim. It is suggested to change "the flows outgoing" to --outgoing flow-- or --the outgoing flow--.

Claim 15 recites the limitation "via reformer" in line 4. By this wording, it is unclear as to what extent the reformer allows or enables the air compressor to pressurize the fuel cell. It is suggested to change "via reformer" to --via said reformer outlet--, such as recited in claim 14 lines 6-7.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Pettit. (U.S. Pat. 6,077,620)

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Claim 1 is one of two independent claims present for consideration. Regarding claim 1, Pettit teaches a fuel cell power plant wherein the reformer [2] is coupled to the fuel cell [16], the fuel cell fuel outlet and air outlet is coupled to the combustion chamber [48] and the combustion chamber is coupled to a volume expansion engine [36] with an air compressor [24] coupled to the engine.. (col. 5 line 26-49, col. 3 line 28-44, also applies to claim 34) A heat exchanger [110] extracts heat, e.g. air or cathode effluent from the fuel cell for heating the MeOH-air mixture prior to its feeding to the preheated reformer. (col. 5 line 50 to col. 6 line 66, applies to claims 2-4) The engine power Pettit can never be more than 66.7% of total power. In this regard, however, it is unclear to the examiner how this line of argument is germane to the presently claimed invention, for the scope of the present claims requires the "fuel cell" to be no greater than 50% of "engine power" (and not in the reverse relational order). Even if it were assumed *arguendo* that in Pettit the engine power never exceeded 66.7% of total power, then at least at that level of power it would follow that the fuel cell would encompass the remaining 33.3%, which is no greater than 50% of 66.7.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettit as applied to claims 1-4 and 34 above.

The teachings of Pettit are discussed above.

As to the power of the fuel cell being no greater than 50% of the power of the volume expansion engine, absent of unexpected results it is asserted that the power of the fuel cell relative to that of the volume expansion engine is an optimizable parameter for a result-effective variable. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettit as applied to claims 1-4 and 34 above, in view of Kaneko et al. (U.S. Pat. 4,923,768)

The teachings of Pettit are discussed above.

Pettit does not explicitly teach the claimed heat exchanger system. However, Kaneko is relied upon to show a heat exchanger system [13] for heating water or for coupling of the volume expansion engine with an electric generator [9]. (col. 5 line 26-44) The skilled artisan would find obvious to modify Pettit's invention by employing a heat exchanger or electric generator for reasons such as obtaining optimization of energy extraction from the fuel cell system.

Claims 7, 8, 12, 13, 23, 24, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettit as applied to claims 1-4 and 34 above, in view of Hsu et al.

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Claims 9 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettit in view of Hsu et al. as applied to claims 7, 8, 13, 23, 24, 32 and 33 above, and further in view of Kaneko et al.

The teachings of Pettit and Pettit in view of Kaneko are discussed above.

Pettit does not explicitly teach a compression refrigerating plant. However, Hsu teaches a cooling component [30] which reads on the particulars of the claimed compression refrigerating plant. (col. 6 line 5-64) The skilled artisan would find obvious to modify or further modify Pettit's invention by employing a compression refrigerating plant for reasons such as integration of a fuel cell with the thermal process element of a compression refrigerating plant in order to create a high efficiency energy system.

### ***Double Patenting***

Claims 1-35 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6,606,850 B2 (hereinafter the '850 Patent). Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims do not preclude a distributor or a second outlet of a reformer as recited in claim 1 line 7 and line 16-19, respectively, and claim 6 line 7 and line 20-23, respectively, of the '850 Patent.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed.

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Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

#### ***Allowable Subject Matter***

Claims 10, 11, 14-22, 26, 27, 29-31 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach or suggest the instant invention regarding, in a first embodiment, the evaporator of the compression refrigerating plant being in thermal contact with the airflow of the ventilation system of a house or industrial building, and wherein, in a second embodiment, an air compressor is coupled to said engine and said motor/generator to generate high levels of heat and electricity, and wherein, in a third embodiment, a distributor is arranged within a power plant to couple the outlet or output of a fuel supply channel to a fuel inlet combustion chamber.



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*Conclusion*

The examiner notes that the citation of U.S. Pat. 6,007,620 to Pettit in the attached PTO-892 is cited to correct a misprint in applicant's IDS filed January 28, 2003.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



jam



Patrick Ryan  
Supervisory Patent Examiner  
Electronic Business Center 1700